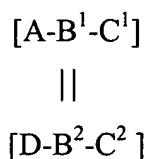


The listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

Claims 1-24. (Canceled).

Claim 25. (Previously presented) An empty MHC complex comprising an sc-MHC class II molecule comprising linked in sequence an MHC  $\beta$  chain-peptide linker-MHC  $\alpha$  chain, the MHC molecule having the general formula:



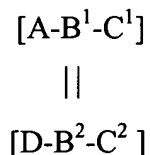
wherein,

- a) A represents at least one empty sc-MHC class II molecule,
- b) B1, B2 are each independently a joining molecule,
- c) C1, C2 are each independently an effector molecule or -H, wherein the effector molecules are each selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, and
- d) D represents at least one ligand binding molecule or -H.

Claim 26. (Previously presented) A MHC complex comprising an empty sc-MHC class II molecule comprising a peptide binding groove, the complex being represented by the formulae A-B-C, B-A-C, or A-C-B, wherein A is at least one sc-MHC class II molecule, B is a joining molecule, C is an effector molecule or -H, and the effector molecule is selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, provided that the effector molecule is not an MHC class II molecule, and provided that when the complex is represented by A-C-B, -C- is not -H.

Claim 27. (Previously presented) A loaded MHC complex formed by contacting the MHC complexes of claim 25 or 26 with a presenting peptide under conditions which form a specific binding complex between the presenting peptide and at least one of the empty sc-MHC class II molecules.

Claim 28. (Previously presented) A MHC complex fusion molecule comprising an sc-MHC molecule with peptide binding groove, the MHC molecule comprising linked in sequence an MHC  $\beta$  chain-peptide linker-MHC  $\alpha$  chain, the complex being represented by the following formula:



wherein,

- a) A represents at least one empty sc-MHC class II molecule comprising a recombinantly fused presenting peptide,
- b) B1, B2 are each independently a joining molecule,

c) C1, C2 are each independently an effector molecule or -H, wherein the effector molecules are each selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, and

d) D represents at least one ligand binding molecule or -H.

Claim 29. (Previously presented) A MHC fusion molecule comprising a sc-MHC class II molecule comprising a peptide binding groove, the complex being represented by the formulae: A-B-C, B-A-C, or A-C-B, wherein A is at least one sc-MHC class II molecule comprising a recombinantly fused presenting peptide, B is a joining molecule, C is an effector molecule or -H, and the effector molecule is selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, provided that the effector molecule is not an MHC class II molecule, and provided that when the complex is represented by the formulae: A-C-B, -C- is not H.

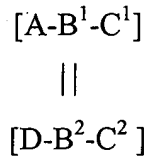
Claims 30-38. (Canceled).

Claim 39. (Previously presented) The MHC complex of any of claims 25 or 28, wherein the joining molecules are each selected from the group consisting of a helix-turn-helix motif and a dendrimer particle.

Claim 40. (Previously presented) The MHC complex of any of claims 26 or 29, wherein the joining molecule is selected from the group consisting of a helix-turn-helix motif and a dendrimer particle.

Claims 41-44. (Canceled)

Claim 45. (Previously presented) An empty MHC complex comprising an sc-MHC class II molecule comprising linked in sequence an MHC  $\beta$  chain-peptide linker-MHC  $\alpha$  chain, the MHC molecule having the general formula:



wherein,

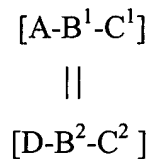
- a) A represents at least one empty sc-MHC class II molecule,
- b) B1, B2 are each independently a joining molecule,
- c) C1, C2 are each independently an effector molecule or -H, and
- d) D represents at least one ligand binding molecule or -H,

wherein each effector molecule is a protein tag, and wherein the protein tags are each selected from the group consisting of 6xHIS, EE epitope, and myc epitope.

Claim 46. (Canceled)

Claim 47. (Previously presented) A MHC complex comprising an empty sc-MHC class II molecule comprising a peptide binding groove, the complex being represented by the formulae A-B-C, B-A-C, or A-C-B, wherein A is at least one sc-MHC class II molecule, B is a joining molecule and C is an effector molecule or -H, provided that when the complex is represented by A-C-B, -C- is not -H, wherein the effector molecule is a protein tag, and wherein the protein tag is selected from the group consisting of 6xHIS, EE epitope, and myc epitope.

Claim 48. (Previously presented) A MHC complex fusion molecule comprising an sc-MHC molecule with peptide binding groove, the MHC molecule comprising linked in sequence an MHC  $\beta$  chain-peptide linker-MHC  $\alpha$  chain, the complex being represented by the following formula:

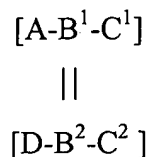


wherein,

- a) A represents at least one empty sc-MHC class II molecule comprising a recombinantly fused presenting peptide,
  - b) B1, B2 are each independently a joining molecule,
  - c) C1, C2 are each independently an effector molecule or -H, and
  - d) D represents at least one ligand binding molecule or -H,
- wherein each effector molecule is a protein tag, and wherein the protein tags are each selected from the group consisting of 6xHIS, EE epitope, and myc epitope.

Claim 49. (currently amended) A MHC fusion molecule comprising a sc-MHC class II molecule comprising a peptide binding groove, the complex being represented by the formulae: A-B-C, B-A-C, or A-C-B, wherein A is at least one sc-MHC class II molecule comprising a recombinantly fused presenting peptide, B is a joining molecule and C is an effector molecule or -H, provided that when the complex is represented by the formulae: A-C-B, in which -C- is not H, wherein the effector molecule is a protein tag, and further wherein the protein tag is selected from the group consisting of 6xHIS, EE epitope, and myc epitope.

Claim 50 (New) An empty MHC complex comprising an sc-MHC class II molecule comprising linked in sequence an MHC  $\beta$  chain-peptide linker-MHC  $\alpha$  chain, the MHC molecule having the general formula:



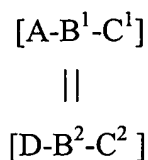
wherein,

- a) A represents at least one empty sc-MHC class II molecule,

- b) B1, B2 are each independently a joining molecule,
- c) C1, C2 are each independently an effector molecule or -H, wherein the effector molecules are each selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, and
- d) D represents at least one ligand binding molecule or -H; wherein the MHC complex comprises the complex in Figure 9B.

Claim 51. (New) A MHC complex comprising an empty sc-MHC class II molecule comprising a peptide binding groove, the complex being represented by the formulae A-B-C, B-A-C, or A-C-B, wherein A is at least one sc-MHC class II molecule, B is a joining molecule, C is an effector molecule or -H, and the effector molecule is selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, provided that the effector molecule is not an MHC class II molecule, and further provided that when the complex is represented by A-C-B in which -C- is not -H, wherein the MHC complex comprises the complex in Figure 9B.

Claim 52 (New) A MHC complex fusion molecule comprising an sc-MHC molecule with peptide binding groove, the MHC molecule comprising linked in sequence an MHC  $\beta$  chain-peptide linker-MHC  $\alpha$  chain, the complex being represented by the following formula:



wherein,

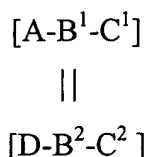
- a) A represents at least one empty sc-MHC class II molecule comprising a recombinantly fused presenting peptide,
- b) B1, B2 are each independently a joining molecule,

c) C1, C2 are each independently an effector molecule or -H, wherein the effector molecules are each selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, and

d) D represents at least one ligand binding molecule or -H; wherein the MHC complex comprises the complex in Figure 9B.

Claim 53. (New) A MHC fusion molecule comprising a sc-MHC class II molecule comprising a peptide binding groove, the complex being represented by the formulae: A-B-C, B-A-C, or A-C-B, wherein A is at least one sc-MHC class II molecule comprising a recombinantly fused presenting peptide, B is a joining molecule, C is an effector molecule or -H, and the effector molecule is selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, provided that the effector molecule is not an MHC class II molecule, and further provided that when the complex is represented by the formulae: A-C-B in which -C- is not H; wherein the MHC complex comprises the complex in Figure 9B.

Claim 54. (New) An empty MHC complex comprising an sc-MHC class II molecule comprising linked in sequence an MHC  $\beta$  chain-peptide linker-MHC  $\alpha$  chain, the MHC molecule having the general formula:



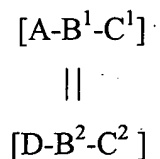
wherein,

- a) A represents at least one empty sc-MHC class II molecule,
- b) B1, B2 are each independently a joining molecule,

c) C1, C2 are each independently an effector molecule or -H, wherein the effector molecules are each selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, and

d) D represents at least one ligand binding molecule or -H; wherein the ligand binding molecule is selected from the group consisting of an immunoglobulin, a single-chain antibody, an Fv, and a receptor ligand.

Claim 55. (New) A MHC complex fusion molecule comprising an sc-MHC molecule with peptide binding groove, the MHC molecule comprising linked in sequence an MHC  $\beta$  chain-peptide linker-MHC  $\alpha$  chain, the complex being represented by the following formula:



wherein,

a) A represents at least one empty sc-MHC class II molecule comprising a recombinantly fused presenting peptide,

b) B1, B2 are each independently a joining molecule,

c) C1, C2 are each independently an effector molecule or -H, wherein the effector molecules are each selected from the group consisting of a cell toxin other than ricin or diphtheria toxin, a chemotherapeutic drug, a radionuclide, a protein tag, a hormone, a fluor, an enzyme, an enzyme substrate, a cofactor, an enzyme inhibitor, a ligand, a hapten, biotin, a carbohydrate, and a fatty acid, and

d) D represents at least one ligand binding molecule or -H; wherein the ligand binding molecule is selected from the group consisting of an immunoglobulin, a single-chain antibody, an Fv, and a receptor ligand.



Claim 56. (New ) The MHC complex of claim 54 or 55, wherein the immunoglobulin, single-chain antibody, or Fv is capable of binding a cell surface target selected from the group consisting of CD2, CD3, CD4, CD8, CD28, CD40, CD45, CTLA4, and Fas.

Claim 57. (New) The MHC complex of claim 54 or 55, wherein the receptor ligand is selected from the group consisting of FasL, CD80, and CD86.